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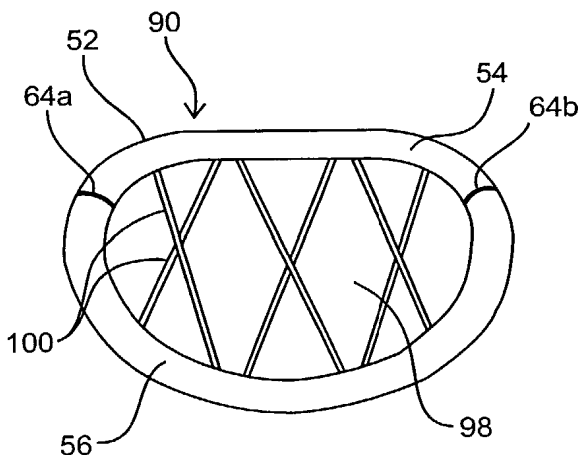
Published:

- with international search report
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16 June 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ANNULOPLASTY RINGS AND METHODS FOR REPAIRING CARDIAC VALVES



(57) Abstract: Implantable devices and methods for repair of defective cardiac valves (10) are provided. The implantable devices include an annuloplasty ring (52) and a restraining structure (98). The ring (52) includes an anterior segment (54) and a posterior segment (56). Transverse restraining members (100) transverse the major axis of ring (52) and are configured in a criss-cross pattern where each of the legs of the Xs is attached to ring (52).

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/21449

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61F 2/24

US CL : 623/2.36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 623/2.36, 2.37

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,419,695 B1 (GABBAY) 16 July 2002 (16.07.2002), see Figures 1, 4, 11, and 12 where buttress (20) is the strut claimed.	1, 22, and 23
X	WO 01/47438 A1 (BESSLER et al) 05 July 2001 (05.07.2001), see Figures 9 and 10 as well as page 14 where template (106) has struts such that the claim language is read upon.	1, 22, and 23

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

19 February 2005 (19.02.2005)

Date of mailing of the international search report

22 APR 2005

Name and mailing address of the ISA/US

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/21449

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1, 22 and 23

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
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BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING:

A "Invitation To Pay Additional Fees" was mailed to Applicant on January 11, 2005. No response or fees paid within the 15 day time limit. Therefore, only the first claimed invention was examined. In particular only claims 1, 22, and 23 are drawn to the device and are generic to all claimed species. For this reason, claims 2-21 and 24-31 were not examined.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must have been paid. However, no fee was paid so only the first invention was examined. I. Claims 1-23 drawn to a device. II. Claims 24-31 drawn to a method of use.

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for more than one species to be examined, the appropriate additional examination fees must have been paid.

The species are as follows: A.) Figure 2A B.) Figure 3A C.) Figure 3B D.) Figure 3C E.) Figure 3D F.) Figure 4A G.) Figure 4B H.) Figure 4C I.) Figure 4D J.) Figure 5A K.) Figure 5B L.) Figure 5C M.) Figure 5D N.) Figure 6A O.) Figure 6B P.) Figures 7A and 7B Q.) Figures 9A and 9B R.) Figures 10A and 10B S.) Figures 11A and 11B T.) Figures 12A and 12B U.) Figure 16 V.) Figure 17 W.) Figure 18 X.) Figure 19. Applicant is requested to select a species for examination above and then state which claims read on the elected species. The following claim(s) are generic: Claims 1 and 22-31.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The same special technical feature is a ring with a ring configured for placement at a valve annulus having at least one strut extending over the interior area thereof. However at least of patents US 6332893, US 6419695, US 20030120340, US 20030033009, WO 01/47438, WO 87/05489, EP 026533, and US 20030130731 show that this common special technical feature was known to the prior art.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features as explained in the preceding paragraph.